

Date: Wednesday, 3/26/2008 9:53:19 AM
 User: Kim Johnston

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 407 HIGH AFT X-TUBE ASSEMBLY
 Job Number : 38167
 Estimate Number : 10528
 P.O. Number :
 This Issue : 3/26/2008 S.O. No. :
 Prsht Rev. : NC Part Number : D407667205
 First Issue : 1 / 1 Type : LANDING GEAR Drawing Number : D407-667-245 REV D
 Previous Run : 37011 Project Number : N/A
 Material :
 Due Date : 4/15/2008 Qty: 1 Um: Each
 Written By :
 Checked & Approved By : JD 08.3.27
 Comment : Est Rev: C 05.09.02 Add holes for compatibility with Bell
 Skid tubes KJ/JLM
 Est Rev: D Added Magnobond, Rubber Cushion & Clamps
 07-02-19 JLM
 ****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR
 GREATER****

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
1.0	DC	DOCUMENT CONTROL
Comment: DOCUMENT CONTROL Photocopy bluefile and create labels as per PPP D407-667-205 CHG 004		
2.0	PACKAGING 1	PACKAGING RESOURCE #1
Comment: PACKAGING RESOURCE #1		
3.0	D407667205TRN	CROSSTUBE TURNING DETAIL
Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s) CROSSTUBE TURNING DETAIL batch <u>D38010</u>		
4.0	BENDING	BENDING MACHINE
Comment: LANDING GEAR RESOURCE 1 1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio FT		



CHG 004

8.4.18

05/05/06 JLD



EL 8-4-21



EL 8-4-21

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38167

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description:

5.0

QC6

DIMENSIONAL CHECK



Comment: DIMENSIONAL CHECK

08-04-21 (1)

6.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

*see att. mks**08-04-07*

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245 Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245

*EL/SD
8-422*

7.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

AWM 8-4-22

8.0

QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

S. O'Brien

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38167

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

9.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/04/22 (40)

10.0

OUTSIDE SERVICE

OUTSIDE SERVICES



Comment: Sub-Contracting OUTSIDE SERVICES

Liquid Penetrant Inspection as per QSI 0380r

Issue P/O: 6251 LPI as per ASTM 1417

Level 2 Attach copy of NDT results to work order

C 208/04/29 (1)

11.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Inspect for transit damage

Ensure copy of NDT results attached to work order.

08/04/29 (1)

12.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

08/05/05 (40)

13.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

1-Prime inside and outside crosstube as per QSI 005 4.2

2-Paint outside crosstube with White Imron as per QSI 005 4.2

08/04/29 (1)

14.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

Wrap in plastic bag to protect from scratches

08/04/30

15.0

D2856400

Abrasion Strip



Comment: Qty.: 1.3524 f(s)/Unit Total : 1.3524 f(s)

Pick:

Qty Part number Description Batch

2 D2856-400(Cut to 7.73") Abrasion Strip

35900

08/05/05

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 3/26/2008 9:53:19 AM
User: Kim Johnston

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38167

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

16.0

D2873043

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number

Description Batch

2 D2873-043

Nut Plate

37340

ml 08 05 05

17.0

D2873045

Nut Plate Assembly



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number

Description Batch

2 D2873-045

Nut Plate

37341

ml 08 05 05

18.0

D28941

2.750 Support



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

Pick:

Qty Part number

Description Batch

1 D2894-1

Support

21475

ml 08 05 01

19.0

D31901

Chafing Shield



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Pick:

Qty Part number

Description Batch

2 D3190-1

Chafing Shield

37343

ml 08 05 05

20.0

D3595

Rubber Cushion (per sq ft)



Comment: Qty.: 0.0246 sf(s)/Unit Total : 0.0246 sf(s)

Rubber Cushion

2X .750" X 4.30"

Batch:

38618

ml 08 05 01

21.0

MS20601AD4W8

RIVET



Comment: Qty.: 14.0000 Each(s)/Unit Total : 14.0000 Each(s)

Pick:

Qty Part number

Description Batch

14 MS20601AD4W8

Rivet

107376

ml 08 05 05

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38167

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

22.0

MS2192022

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number Description Batch

4 MS21920-22

Clamp

106627

ml 08 05 05

23.0

MS2192025

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 2.0000 Each(s)/Unit Total : 2.0000 Each(s)

Clamp(per MIL-DTL-8783C)

Batch:

107456

ml 08 05 01

24.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

see att.

ml 08-04-07

1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245. Note: (3) top holes should be facing up.

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

ml 08 05 01

3-Install support with magnobond and install clamps as per Dwg D407-667-245. Torque clamps to 80-100 in lb

A/R Magnobond

Batch:

106695

EXP: 04/2009 time: 8:30 am

ml 08 05 01

4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

ml 08 05 05 ①

25.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

08/05/05 (H)

26.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Pick Packing Kit

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38167

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

27.0

AN534A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Bolt
Batch: 104679

SP

28.0

MS21042L5

Nut



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Nut
Batch: 106785

SP

29.0

AN510A

Bolt



Comment: Qty.: 10.0000 Each(s)/Unit Total : 10.0000 Each(s)
Pick:Packing Kit
Qty Part number Description Batch
10 AN5-10A Bolt 101013

SP

30.0

AN532A

Bolt



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)
Pick:Packing Kit
Qty Part number Description Batch
4 AN5-32A Bolt 106519

SP

31.0

AN960JD516

Washer



Comment: Qty.: 18.0000 Each(s)/Unit Total : 18.0000 Each(s)
Pick:Packing Kit
Qty Part number Description Batch
18 AN960JD516 Washer 101534

8/5/5

SP

32.0

QC4

INSPECT 100% KITS FOR COMPLETENESS



Comment: INSPECT 100% KITS FOR COMPLETENESS

08/05/06 (40)

33.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1
Identify and in kanban rack
Location: D

8/5/6

IX
SP

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Wednesday, 3/26/2008 9:53:19 AM
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Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 407 HIGH AFT X-TUBE ASSEMBLY

Job Number: 38167

Part Number: D407667205

Job Number:



Seq. #:

Machine Or Operation:

Description :

34.0

QC21

FINAL INSPECTION/W/O RELEASE



08/05/08

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mf 08-05-08

B38167 D407-667-205

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 04/04/2008 1:15:26 PM
 User: Melanie Fauteux

Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: 407 HIGH AFT X-TUBE ASSEMBLY
Job Number	: 38167		
Estimate Number	: 10528		
P.O. Number	:	Part Number	: D407667205
This Issue	: 04/04/2008	S.O. No.	:
Prsht Rev.	: NC	Drawing Number	: D407-667-245 REV D
First Issue	: 26/03/2008	Project Number	: N/A
Previous Run	: 37011	Drawing Revision	: D
	Type : LANDING GEAR	Material	:
Written By	:	Due Date	: 15/04/2008
Checked & Approved By	:	Qty:	1
Comment	: Est Rev:C 05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM Est Rev:D Added Magnobond,Rubber Cushion & Clamps 07-02-19 JLM ****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR GREATER****		

Additional Product

REFERENCE ONLY *mf*

Job Number:



Seq. #:

Machine Or Operation:

Description:

6.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

- 1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.
- 2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Check dimensions between holes on all four sides.
- 3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.
- 4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.
- 5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245.
- 6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.
- 7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.
- 8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.
- 9-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-245.

E2/3D
8-4-22

AWM 8-4-22

Job Completion



DART AEROSPACE LTD	Work Order: 38167
Description: Crosstube Assembly	Part Number: D407-667-245
Inspection Dwg: D407-667-245 Rev: D	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.490	+0.005/-0.000					
	1.832	+0.005/-0.000					
	1.838	+0.005/-0.000					
	1.892	+0.005/-0.000					
	2.052	+0.005/-0.000					
	2.206	+0.005/-0.000					
	2.521	+0.005/-0.000					
	2.633	+0.005/-0.000					
	4.10	+/-0.030					
	4.978	+/-0.030					
	2.040	+0.000/-0.010					
	0.125	+/-0.010					
	R0.063	+/-0.010					
	R0.500	+/-0.010					
SIDE B	2.490	+0.005/-0.000					
	1.832	+0.005/-0.000					
	1.838	+0.005/-0.000					
	1.892	+0.005/-0.000					
	2.052	+0.005/-0.000					
	2.206	+0.005/-0.000					
	2.521	+0.005/-0.000					
	2.633	+0.005/-0.000					
	4.10	+/-0.030					
	4.978	+/-0.030					
	2.040	+0.000/-0.010					
	0.125	+/-0.010					
	R0.063	+/-0.010					
	R0.500	+/-0.010					
	112.91	+/-0.020					

N/A
Done on previous
W/O 38010
Feb 01 22

Measured by:	Audited by:	Prototype Approval:	N/A
Date:	Date:	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	04.04.21	New Issue (P/O D407-667-205)	KJ/RF	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	06.03.30	Tolerance revised for 4.978 dimension	KJ/JLM	
D	07.02.19	Dwg Rev updated	KJ/JLM	

Date: Friday, 04/04/2008 1:15:51 PM
 User: Melanie Fauteux

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services Drawing Name : 407 HIGH AFT X-TUBE ASSEMBLY
 Job Number : 38167
 Estimate Number : 10528
 P.O. Number :
 This Issue : 04/04/2008 S.O. No. :
 Prsht Rev. : NC
 First Issue : 26/03/2008 Type : LANDING GEAR
 Previous Run : 37011
 Part Number : D407667205
 Drawing Number : D407-667-245 REV D
 Project Number : N/A
 Drawing Revision : D
 Material :
 Due Date : 15/04/2008 Qty: 1 Um: Each

Written By :
 Checked & Approved By :
 Comment : Est Rev:C 05.09.02 Add holes for compatibility with Bell
 Skidtubes KJJ/JLM
 Est Rev:D Added Magnobond,Rubber Cushion & Clamps
 07-02-19 JLM

****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR
 GREATER****

Additional Product

REFERENCE ONLY *mf*

Job Number:



Seq. #: Machine Or Operation: Description :

24.0

CROSSTUBES

CROSSTUBES RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245.Note:
 (3) top holes should be facing up.

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

3-Install support with magnobond and install clamps as per Dwg D407-667-245. Torque clamps to 80-100 in
 lb.

A/R Magnobond

Batch: 106695

EXP: 04/2009 time: 830nm

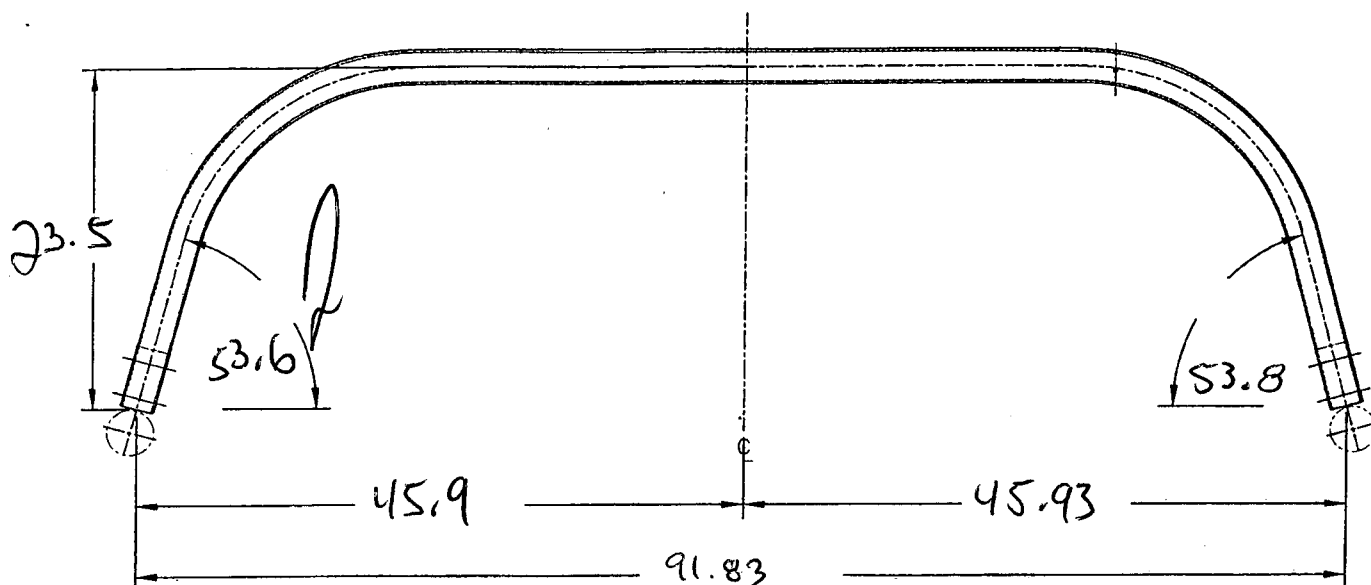
4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

Job Completion



DART AEROSPACE LTD		Work Order:	
Description: Crosstube High Aft (407)		Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: D			Page 1 of 1

Required Dimension	Min	Max
Height	23.46	23.58
1/2 Span	45.86	45.98
Angle	54	56
Total Span	91.72	91.96



Comments

QC15 Inspection	
Date	208-04-21

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	<i>[Signature]</i>

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 38167

DART

DESIGN PH	DRAWN BY PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED [Signature]	APPROVED [Signature]	DRAWING NO. D407-667-245	REV. D SHEET 1 OF 3
DATE 07.02.07		TITLE CROSSTUBE ASS'Y (407 HIGH AFT)	SCALE NTS
A	02.05.13	NEW ISSUE	
B	03.05.21	ADD CHAFING SHIELD	
C	05.07.26	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	
D	07.02.07	ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION	

RELEASED

07.02.14 [Signature]

Qty	Part Number	Description
X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
1	D6011-115	CROSSTUBE
2	D2856-400-773	ABRASION STRIP
2	D2873-043	NUT PLATE
2	D2873-045	NUT PLATE
1	D2894-1	SUPPORT
2	D3190-1	CHAFING SHIELD
2	D3595-075-430	RUBBER CUSHION
14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
4	MS21920-22	CLAMP
2	MS21920-25	CLAMP (OR MS21920-24)

GENERAL NOTES:

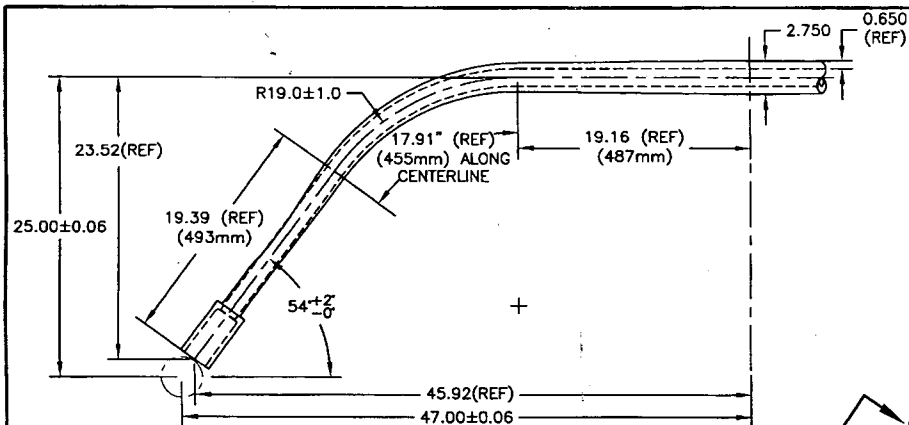
- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-25 CLAMPS WITH D3595-075-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB.
- 14) INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.

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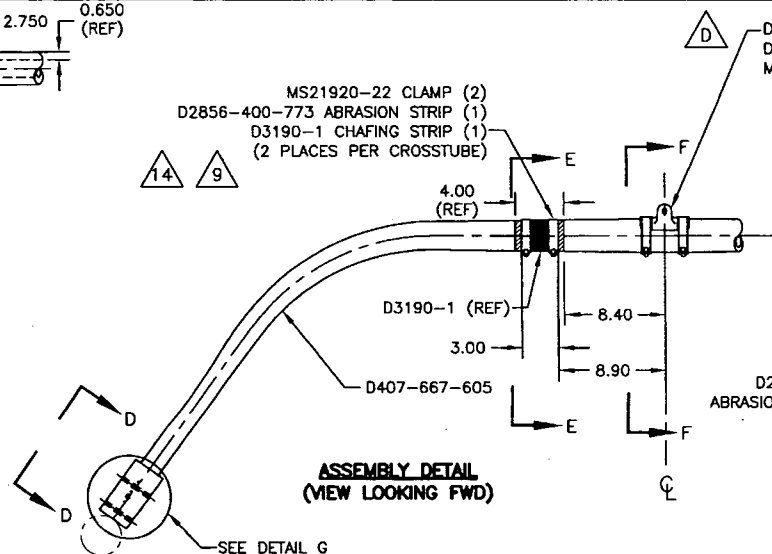
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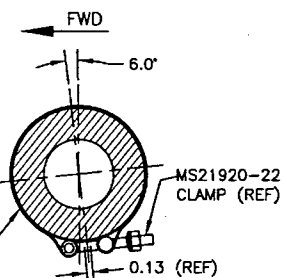
BENDING DETAIL 6

MS21920-22 CLAMP (2)
D2856-400-773 ABRASION STRIP (1)
D3190-1 CHAFING STRIP (1)
(2 PLACES PER CROSSTUBE)



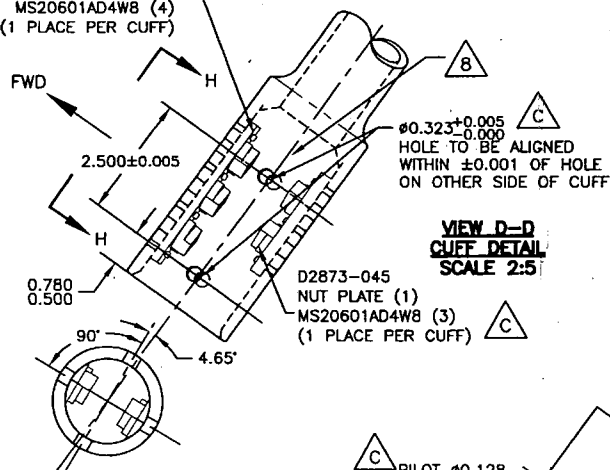
ASSEMBLY DETAIL
(VIEW LOOKING FWD)

D2894-1 SUPPORT (1)
D3595-075-430 RUBBER CUSHION (2)
MS21920-25 CLAMP (2)



SECTION E-E
SCALE 2:5

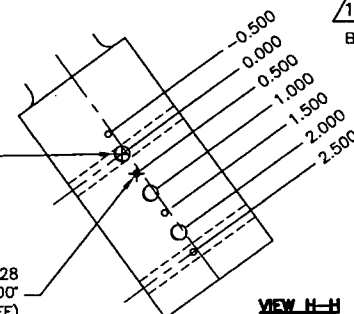
C D2873-043
NUT PLATE (1)
MS20601AD4W8 (4)
(1 PLACE PER CUFF)



VIEW D-D
CUFF DETAIL
SCALE 2:5

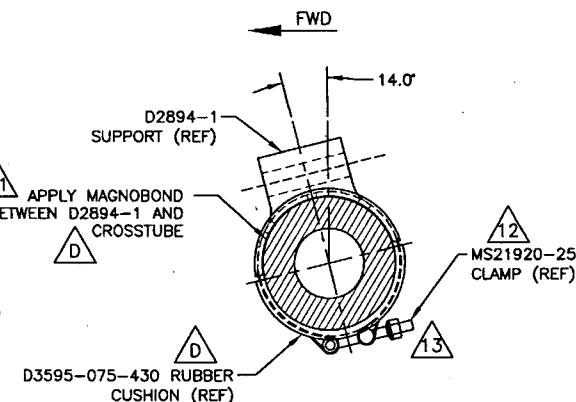
C $\phi 0.323^{+0.005}_{-0.000}$
(TYP 3 PLACES PER CUFF)
HOLE TO BE ALIGNED WITHIN ± 0.001
OF HOLE ON OTHER SIDE OF CUFF

C PILOT $\phi 0.128$
C'SINK $\phi 0.225 \times 100'$
(TYP 4 PLACES PER CUFF)



VIEW H-H
SCALE 2:5
(VIEW LOOKING AFT, ROTATED)

11 APPLY MAGNOBOND
BETWEEN D2894-1 AND
CROSSTUBE



SECTION F-F
SCALE 2:5

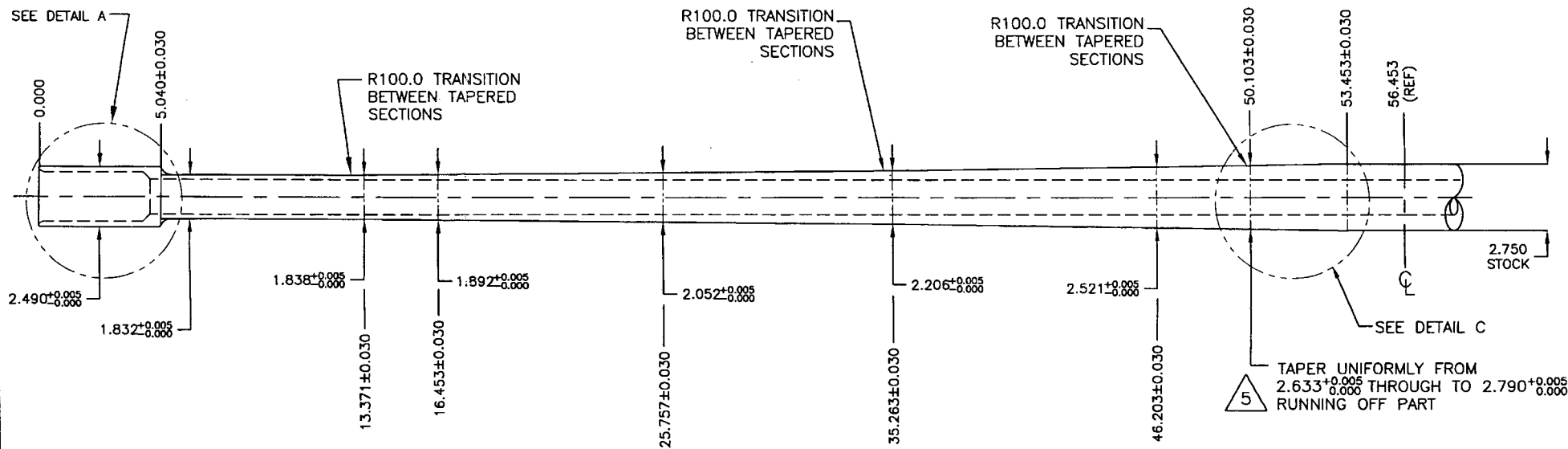
07.02.14

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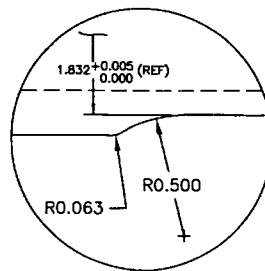
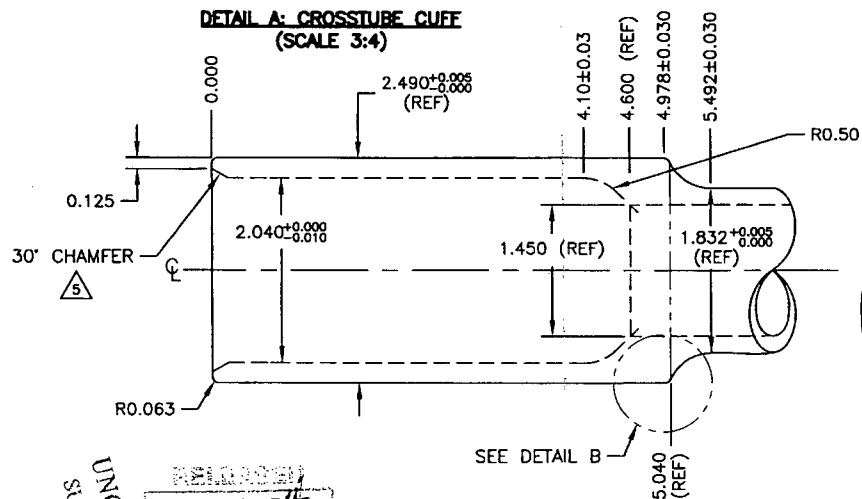
DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE LTD. HAMPSHIRE, ONTARIO, CANADA
CHECKED	PH	APPROVED	PH	DRAWING NO.	REV. D
DATE	07.02.07	TITLE	CROSSTUBE ASS'Y (407 HIGH AFT)	D407-667-245	SHEET 2 OF 3
		SCALE	1:10		

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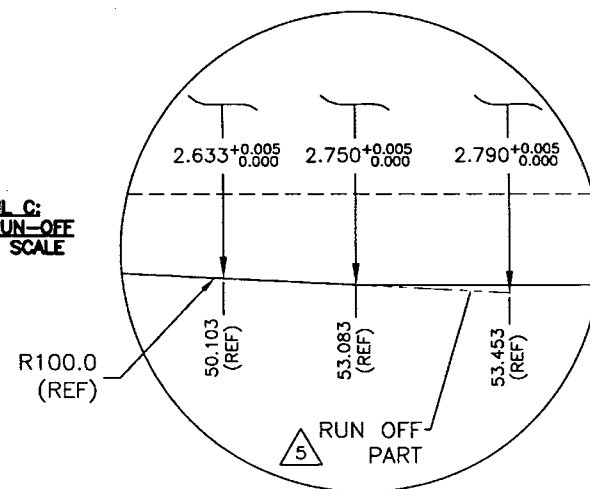
D407-667-245 MACHINING DETAIL

**DETAIL A: CROSSTUBE CUFF
(SCALE 3:4)**



**DETAIL B: CUFF
TRANSITION
SCALE 2:1**

**DETAIL C:
TAPER RUN-OFF
NOT TO SCALE**



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DESIGN	PH	DRAWN BY	PH	DART	DART AEROSPACE LTD. HAMPSHIRE, ONTARIO, CANADA
CHECKED	PH	APPROVED	PH	DRAWING NO.	D407-667-245
DATE	07.02.07	TITLE	CROSSTUBE ASS'Y (407 HIGH AFT)	REV. D	SHEET 3 OF 3
				SCALE	1:4

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LIQUID PENETRANT TEST REPORT

P - 1269 1

PAGE 1 OF 1

CLIENT	DART AEROSPACE	DATE	APR 28, 2008	TIME	AM <input type="checkbox"/> PM <input type="checkbox"/>
ATTENTION	LINDA LACELLE	ACUREN JOB NO.	188 08 1269		
ADDRESS	1270 ABERDEEN ST	PO/NO.			
	HAWKESBURY, ONT.	WORK LOCATION	HAWKESBURY		
		ACCEPTANCE STD.	ASTM 1417/QSI-038	REV./DATE	2005
PROJECT	407 HIGH AFT X TUBE, 212/205 HIGH FED X TUBE, 206B AFT X TUBE				
ITEM(S) EXAMINED	JOB #S 407-38167, 212/205-38569, 38570, 206B-37953.				

JOB DESCRIPTION	PROCEDURE NO. LT-0002	REV./DATE	TECHNIQUE NO. LT-TECH2	REV./DATE
PART NO. D407667205/D212664101/D206667201.	MATERIAL	ALODINED ALUM.	THICKNESS	
SCOPE WET FLOURESCENT LIQUID PENETRANT INSPECTION CARRIED OUT ON 100% EXTERNAL SURFACE				

TEST DETAILS

METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	MAGNAFLUX		BLACK LGHT8171	<input type="checkbox"/> OUTPUT > 1000 μ W/cm ²	<input type="checkbox"/> AMBIENT < 2 fc
PENETRANTZL67	MINIMUM DWELL TIME	45 MIN.	LIGHTING EQUIP.	<input type="checkbox"/> FLASHLIGHT	<input type="checkbox"/> TROUBLELIGHT
PENETRANT REMOVER H2O	MINIMUM DRY TIME	>10 MIN.	OTHER	CAL FEB 12 08	
DEVELOPER SKDS2	MINIMUM DWELL TIME	10 MIN.	LIGHT METER S/N	CAL DUE DATE	
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY		

TEST SURFACE

SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < - 4°C/ 20°F	<input type="checkbox"/> - 4°C/ 20°F TO 10°C/50°F	<input type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F	

RESULTS- (☐ METRIC ☒ IMPERIAL)

FLUORESCENT LIQUID PENETRANT INSPECTION
CARRIED OUT ON 100% EXTERNAL
SURFACE ON:
407AFT X TUBE JOB#S: 38167.
206B AFT X TUBE JOB#: 37953.
212/205 HIGH FED X TUBE JOB#S: 38569, 38570.

RESULTS: NO INDICATION OF DEFECTS.
ITEMS ACCEPTABLE TO STANDARD

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner operator and the owner operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE		DTR # E 19656		
TECHNICIAN (SIGNATURE):		REPORT REVIEWED BY:		
NAME (PRINT):	JASON HEWETT	NAME INITIALS		
	1 ST TECHNICIAN	2 ND TECHNICIAN		
CGSB LEVEL	2	SNT LEVEL	CGSB LEVEL	SNT LEVEL
CGSB REG. NO	6156	CGSB REG. NO		

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